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FOOD AND AGRICULTURE RESEARCH GRANTS

Fiscal Year 1980



UNITED STATES
DEPARTMENT OF
AGRICULTURE

MISCELLANEOUS
PUBLICATION
NUMBER 1396

PREPARED BY
SCIENCE AND EDUCATION
ADMINISTRATION-
COOPERATIVE RESEARCH

FOOD AND AGRICULTURE
RESEARCH GRANTS
FISCAL YEAR 1980

NOV 21 1980

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FOREWORD

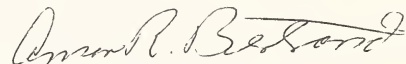
One of this country's most pressing needs is for intensified basic research in the food and agricultural sciences. We must increase our agriculture's productivity, safeguard the quality of our crops and livestock, discover new controls for diseases and pests, preserve and enhance our environment, collect and use wisely the energy resources available to us, and improve the nutritional well-being of all people.

A vigorous, multi-disciplinary approach to research of this scope requires a diversity of scientific talents. The Science and Education Administration of the U.S. Department of Agriculture is committed to such an approach among its own researchers in Federal laboratories and in a nationwide research partnership that encompasses State agricultural experiment stations, schools of forestry, 1890 land-grant institutions and Tuskegee Institute, colleges of veterinary medicine and other public and private research organizations.

While this partnership has provided the Nation with a remarkable record of accomplishment over the years, both Congress and the USDA have recognized the need for additional research efforts in high-priority areas and for enlisting the talents of scientists outside the scope of this traditional partnership. To help meet these needs, the grants programs described in this booklet have been established. The Cooperative Research unit of the Science and Education Administration is responsible for administering the funds for these grants, except for the Solar Energy grants which are administered

through the SEA Energy Center at Tifton, GA. During the fiscal year October 1, 1979 to September 30, 1980, grants totaling \$27,056,800 were awarded to fund research projects at 106 institutions.

Scientists with special expertise throughout the U.S. scientific community are now involved in building the broad base of knowledge we need if we are to meet the increasing challenges facing our food and agriculture system.



ANSON R. BERTRAND
Director
Science and Education Administration

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Science and Education Administration, U.S.
Department of Agriculture, Washington, D.C. 20250.

FOOD AND AGRICULTURE RESEARCH GRANTS

Fiscal Year 1980

THE GRANTS PROGRAM

The research grants programs of the Science and Education Administration that used the competitive process in the selection of grants during Fiscal Year 1980 are:

1. Competitive Research Grants Program to support basic research in the food and agricultural sciences;

2. Special Research Grants Program to support research deemed by the Congress and the Department of Agriculture to be of particular importance to the Nation;

3. Alcohols and Industrial Hydrocarbons Programs;

4. Native Latex Research Program; and

5. Solar Energy Systems for Agriculture Program.

These sources of funding supplement and complement the basic State research institution formula funding by Congress to help maintain a viable, effective on-going State-Federal agricultural research capability for this country.

All the grant funds except the Solar Energy Systems for Agriculture grants are administered through Cooperative Research in SEA. The Solar

grants are administered by SEA's Southern Energy Center, Tifton, Ga. Guidelines for grants to be awarded competitively are published annually in the Federal Register, usually near the end of each calendar year. The guidelines identify selected research areas, the amount of funding, and the requirements for the submission of proposals.

Single copies or annual or semiannual subscriptions of the Federal Register are available for a small charge from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

If you want further information on program aspects of these grants, contact:

Dr. Walter I. Thomas
Administrator
Cooperative Research
Science and Education Administration
U.S. Department of Agriculture
Washington, D.C. 20250

If you want information on administrative aspects of these grants, contact:

Mr. Gene P. Spory
Grants Management Officer
Grants Administrative Management Office
Science and Education Administration
U.S. Department of Agriculture
Suite 103, Rosslyn Commonwealth Building
1300 Wilson Boulevard
Arlington, Virginia 22209

All competitive funds for FY 1980 have been awarded. Any future competitive programs will be announced through the Federal Register.

COMPETITIVE RESEARCH GRANTS PROGRAM

The grants awarded in this program concentrate in the plant biology and human nutrition areas. These two areas were selected because many scientific groups consider them to offer exceptional opportunity for fundamental scientific discovery. Research in these areas, in the long run, should contribute to applied research and development vitally needed for solving important food and nutrition problems. There is a need for innovative approaches and enhanced levels of funding to find ways to increase food production and improve human nutrition.

The following tabulation lists the funds awarded in the various areas in FY 1980 under the Competitive Research Grants Program.

Plant biology	\$12,222,000
Biological nitrogen fixation	\$2,813,000
Photosynthesis	\$2,813,000
Genetic mechanisms for crop improvement	\$3,298,000
Biological stress on plants	\$3,298,000
Human requirements for nutrients	\$ 2,813,000
TOTAL	\$15,035,000

This program is administered under the authority of Section 2(b) of P.L. 89-106, 7 U.S.C. 4501 as

amended by Section 1414 of P.L. 95-113 and P.L. 92-224. It is open to qualified scientists in the United States. Scientists associated with the State agricultural experiment stations, all U.S. colleges and universities, other research institutions and organizations, Federal agencies, private organizations or corporations, and individuals may submit proposals.

Plant Biology

Grants were awarded in four areas of research in plant biology: Biological nitrogen fixation, photosynthesis, genetic mechanisms for crop improvement, and biological stress on plants. A brief description of each area of research follows with a listing of research grants made during FY 1980.

Biological Nitrogen Fixation

Grants in this area support research to find ways to naturally increase the nitrogen available to plants. Lack of nitrogen for plant growth is the most common limiting factor in crop agriculture. This research will contribute to understanding nitrogen-fixing mechanisms in both symbiotic and free-living organisms, as well as the fate of fixed nitrogen.

The objective of this research is to build a foundation of basic information concerning nitrogen fixation. This information should help us enhance the process in currently known systems and provide a base for developing new nitrogen fixing associations--by genetic transfer or other means--for crop species not now possessing such capability.

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of California Davis, California 95616	Enhancement of Biological Nitrogen Fixation by the <u>Azolla</u> - <u>Anabaena</u> Symbiosis	Donald W. Rains	\$100,000	08/01/80	07/31/82
Univ. of California Santa Cruz, California 95064	Regulation of <u>Rhizobium</u> Nitrogen Fixation	Robert A. Ludwig	\$120,000	08/01/80	07/31/82
Stanford Univ. Stanford, California 94305	Structural Studies of Nitrogenase and the FeMo-Cofactor	Keith O. Hodgson	\$125,000	09/01/80	08/31/82
Univ. of Chicago Chicago, Illinois 60637	Nitrogen Fixation in Blue- Green Algae (Cyanobacteria)	Robert Haselkorn	\$135,000	09/26/78	07/31/82
USDA, SEA, AR North Central Region 2000 W. Pioneer Parkway Peoria, Illinois 61614	Biochemistry and Physiology of Symbiotic Nitrogen Fixation of Alfalfa	Carroll P. Vance	\$115,000	08/01/80	07/31/82
Indiana Univ. Foundation Bloomington, Indiana 47401	The Chemistry of (MoS) ₄ and (MoFeS ₂) ₂ Clusters	Rupert A.D. Wentworth	\$45,000	08/01/80	07/31/82
Iowa State Univ. of Science & Technology Ames, Iowa 50011	Gene Transfer and Mapping in <u>Rhizobium japonicum</u>	Alan G. Atherly	\$70,000	09/01/80	08/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Kansas State Univ. Manhattan, Kansas 66506	Mechanisms of Legume- Rhizobium Interaction	Peter P. Wong	\$90,000	09/14/78	07/31/82
Johns Hopkins Univ. Baltimore, Maryland 21227	Factors Involved in and Regulation of the H ₂ Uptake System in <u>Rhizobium</u>	Robert J. Maier	\$120,000	07/15/80	07/31/82
Harvard College Cambridge, Massachusetts 02138	Energy Requirement for Nitrogen Fixation in Root Nodules	John D. Tjepkema	\$70,000	09/05/78	07/31/82
Massachusetts Institute of Technology Cambridge, Massachusetts 02139	Genetics of Nodulation Specificity and Physiology in Rhizobium	Ethan R. Signer	\$90,000	09/01/80	08/31/82
Michigan State Univ. East Lansing, Michigan 48824	Nitrate Regulation of Recognition in the <u>Rhizobium</u> -Clover Symbiosis	Frank B. Dazzo	\$75,000	09/05/78	07/31/82
Michigan State Univ. East Lansing, Michigan 48824	Models for the Metal Cofactors of Nitrogenase: Potential N ₂ Fixation Catalysts	Bruce A. Averill	\$100,000	09/26/78	07/31/82
Michigan State Univ. East Lansing, Michigan 48824	Regulation of Heme Synthesis in Rhizobium	Kenneth D. Nadler	\$50,000	09/14/78	09/30/81
Michigan State Univ. East Lansing, Michigan 48824	Fixed Nitrogen Regulation of Host-Symbiont Recognition in the <u>Rhizobium</u> -Clover Symbiosis	Frank B. Dazzo	\$6,200	12/14/79	09/30/80

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Michigan State Univ. East Lansing, Michigan 48824	Siroheme and Assimilatory Nitrite Reduction, A Model Study	Chi K. Chang	\$110,000	08/01/80	07/31/82
Univ. of Minnesota St. Paul, Minneosta 55114	Effect of Interspecific Bean Hybrids on Symbiotic Nitrogen Fixation	Peter D. Ascher	\$85,000	08/08/79	08/31/82
Univ. of Minnesota St. Paul, Minnesota 55114	Structure-Function of Fe-Protein	James B. Howard	\$75,000	09/14/78	08/31/82
Univ. of Missouri Columbia, Missouri 65211	Biochemical and Physiological Limitations of Nitrogen Fixation in Legumes	David W. Emerich	\$120,000	08/15/80	08/31/82
Univ. of Nebraska Lincoln, Nebraska 68583	Plasmids of <u>Rhizobium</u> <u>japonicum</u> Indigenous to Alkaline Soils	Anne K. Vidaver	\$32,800	09/15/80	09/30/82
Rutgers--The State Univ. New Brunswick, New Jersey 08903	Improved Strains of Nitrogen-Fixing Actinomycetes	Mary P. Lechevalier	\$35,000	08/01/80	07/31/82
North Carolina State Univ. Raleigh, North Carolina 27650	Selection of Host Plants for Enhanced Nitrogen Fixation	Johnny C. Wynne	\$75,000	08/01/80	07/31/83

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Charles F. Kettering Foundation Research Lab 150 East South College St. Yellow Springs, Ohio 45387	The Mechanism and Energetics of Biological Nitrogen Fixation	Gerald D. Watt	\$110,000	09/26/78	09/30/82
Charles F. Kettering Foundation Research Lab 150 E. South College St. Yellow Springs, Ohio 45387	Nitrogenase Reactivity: Relevance to Molecular Mechanism and Cellular Physiology	Barbara K. Burgess	\$125,000	08/31/79	07/31/82
Charles F. Kettering Foundation Research Lab 150 E. South College St. Yellow Springs, Ohio 45387	Mechanisms by Which Soybean Plants Optimize Infection and Nodulation by Rhizobia	Wolfgang D. Bauer	\$115,000	09/05/78	07/31/82
Oregon State Univ. Corvallis, Oregon 97331	Transfer and Deletion of the Hydrogenase in Rhizobia	Harold J. Evans	\$94,000	09/14/78	07/31/82
Univ. of Pittsburgh Pittsburgh, Pennsylvania 15260	Crystallographic Study of Nitrogenase	Charles D. Stout	\$105,000	09/19/78	07/31/82
Univ. of Texas at Austin Austin, Texas 78172	The Protection of Nitrogenase from Oxygen in Cyanobacteria	F. R. Tabita	\$75,000	08/01/80	07/31/82
Middlebury College Middlebury, Vermont 05753	Isolation and Strain Analysis of Symbiotic N ₂ -Fixing Actinomycetes	Dwight Dee Baker	\$65,000	07/15/80	06/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: NITROGEN FIXATION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Virginia Polytechnic Inst. & State Univ. Blacksburg, Virginia 24061	Role of H ₂ -Oxidizing Hydrogenase in N ₂ -Fixation	Jiann-Shin Chen	\$35,000	09/26/78	09/30/81
Washington State Univ. Pullman, Washington 99164	Construction of a Genetic Transfer Agent for <u>Rhizobium</u> meliloti	Michael L. Kahn	\$130,000	08/15/80	08/31/82
Univ. of Washington Seattle, Washington 98195	Nitrogen-Fixation in Methane Oxidizing Bacteria	Mary L. O'Connor	\$45,000	09/22/78	07/31/81
Univ. of Wisconsin Madison, Wisconsin 53706	Assimilation and Transport of Nitrogenous Compounds in Legumes	Lawrence E. Schrader	\$70,000	07/01/80	06/30/82

TOTAL: \$ 2,813,000

Photosynthesis

Grants in this area focus on a better understanding of photosynthesis and associated carbon metabolism. Photosynthesis is the process whereby plants convert solar energy into chemical products that plants and animals use for growth and development. There are many indications that crop plant productivity can be raised by increasing photosynthetic efficiency.

The program's aim is to cover such areas as the mechanisms of energy capture and conversion, structure, synthesis, and turnover of the photosynthetic apparatus, CO₂ fixation, photorespiration, and dark respiration. Other areas included in this program are projects on the relation of plant development to photosynthesis, including development of photosynthetic competence, translocation and partition of photosynthetic products and the attendant energetic considerations; and design of whole leaf and whole plant structures best suited for photosynthetic productivity. Another area set forth for proposals is that of the design of new methods of genetic and cellular manipulation to improve photosynthetic efficiency in plants--including studies of the chloroplast genome, of nuclear genes regulating photosynthesis, and analysis of regulatory steps controlling both nuclear and cytoplasmic genome expression and their interactions.

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Arizona Tucson, Arizona 85721	Regulation of Photosynthetic CO ₂ Assimilation in Wheat and Other Plants	Richard G. Jensen	\$70,000	09/14/78	08/31/82
Univ. of California Davis, California 95616	Mutants of a Plant-Type Ribulose Bisphosphate Carboxylase-Oxygenase	Raymond C. Valentine	\$68,000	09/22/78	09/30/83
Univ. of California Los Angeles, California 90024	Ribulose Bisphosphate Carboxylase: Structure and Function	David S. Eisenberg	\$79,000	09/01/80	08/31/82
Univ. of California Los Angeles, California 90024	Light Regulation of the Synthesis of Two Major Proteins of Photosynthesis	Elaine M. Tobin	\$62,000	09/26/78	09/30/82
USDA, SEA, AR Western Region 1333 Broadway, Suite 400 Oakland, California 94612	Control Mechanisms for Photosynthate Partitioning in Sugarbeet	Roger E. Wyse	\$70,000	09/26/78	08/31/82
Stanford Univ. Stanford, California 94305	Structural Studies of the Origin of Photosynthetic Efficiency	Steven G. Boxer	\$80,000	09/22/78	07/31/82
Univ. of Denver (Colorado Seminary) Denver, Colorado 80208	The Structure and Function of the Photosynthetic System of the Leaf	Steven P. Berg	\$72,000	09/19/78	08/31/82
Carnegie Institution of Washington 1530 P Street, N. W. Washington, D.C. 20005	Photosynthetic Adaptation of Desert Annuals to Temperature and Light	Joseph A. Berry	\$72,000	09/19/78	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM

PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Florida Gainesville, Florida 32611	Photosynthesis and Photo- respiration in Aquatic Plants	George E. Bowes	\$70,000	09/11/78	08/31/82
Univ. of Georgia Research Fdn. Inc. Athens, Georgia 30602	Hybridizations Between Panicum Species Differing in Photosynthetic Pathways	Ronald H. Brown	\$77,000	09/26/78	07/31/83
Univ. of Idaho Moscow, Idaho 83843	Biochemical and Genetic Studies into the Synthesis and the Metabolism of Glycolate	David J. Oliver	\$50,000	09/01/80	08/31/82
Univ. of Illinois at Chicago Circle Chicago, Illinois 60680	Enzyme Associations in the Photosynthetic System	Louise E. Anderson	\$62,000	09/26/78	07/31/82
Univ. of Notre Dame Notre Dame, Indiana 46556	Ion Transfer in Photosynthesis	J. Michael Gould	\$62,000	09/14/78	09/30/82
Purdue Research Foundation West Lafayette, Indiana 47907	Dark Modulation in the Light-Dark Regulation of Photosynthetic Enzymes	Bernard Axelrod	\$60,000	09/15/80	09/30/82
Purdue Research Foundation West Lafayette, Indiana 47907	Mechanisms of Electron Transport in Photosynthesis	John L. Markley	\$62,000	09/26/78	09/30/82
Purdue Research Foundation West Lafayette, Indiana 47907	The Primary Structure of Cytochrome F and Other Photosynthetic Catalysts	M. A. Hermodson	\$62,000	09/26/78	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Coupling of Electron Flow to ATP Synthesis in Higher Plant Chloroplasts	William S. Cohen	\$50,000	09/01/80	08/31/82
Univ. of Maryland, Baltimore County Catonsville, Maryland 21228	Regulation of Electron Flow to Oxygen in Higher Plants	Thomas V. Marsho	\$34,000	09/22/78	09/30/81
Amherst College Amherst, Massachusetts 01002	Quantum Yields and Orientational Aspects of Bacterial and Plant Reaction Centers	Robert E. Blankenship	\$70,000	08/01/80	07/31/82
Harvard College Cambridge, Massachusetts 02138	Genes for Photosynthesis in Corn	Lawrence Bogorad	\$150,000	08/28/78	08/31/82
Univ. of Michigan Ann Arbor, Michigan 48109	Protein Production and Energy Metabolism in Microscopic Plants	Charles F. Yocum	\$62,000	09/14/78	09/30/82
Univ. of Minnesota St. Paul, Minnesota 55114	Regulation of Leaf Photosynthesis by Reproductive Sinks	William A. Brun	\$70,000	09/26/78	09/30/82
Univ. of Missouri Columbia, Missouri 65211	Cloning of Photosynthetic Genes in a Blue-Green Alga	Louis A. Sherman	\$75,000	09/01/80	08/31/82
Univ. of Missouri Columbia, Missouri 65211	Light-Dependent Regulation of Photosynthetic Enzymes in the C ₄ Plant, <u>Zea Mays</u>	Takeshi Kagawa	\$62,000	09/01/80	08/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Agric. Expt. Station Univ. of Nebraska Lincoln, Nebraska 68583	Structure-Function Relation- ships in Higher Plant Ribulosebiphosphate Carboxylase	Raymond Chollet	\$58,000	09/19/78	09/30/82
Rutgers, The State Univ. New Brunswick, New Jersey 08903	Structure and Function of an Energy Transfer Pigment in Photosynthesis	Barbara A. Zilinskas	\$55,000	09/26/78	08/31/82
Cornell Univ. Ithaca, New York 14853	Photosynthate and Hormone Partitioning in Relation to Whole Plant Senescence	Peter J. Davies	\$73,000	09/11/78	08/31/82
CUNY on Behalf of Hunter College New York, New York 10021	Isolation of the Water- Splitting Apparatus of Photosynthesis	Richard G. Piccioni	\$60,000	09/15/80	09/30/82
Rensselaer Polytechnic Institute Troy, New York 12181	Electron Transport and Oxygen Evolution in Photosynthesis	Joseph T. Warden	\$58,000	09/11/78	09/30/82
Univ. of Cincinnati Cincinnati, Ohio 45221	Photosystem II: Oxygen- Evolution and A Manganese- Protein of Chloroplasts	G. Douglas Winget	\$75,000	09/01/80	08/31/82
Univ. of Cincinnati Cincinnati, Ohio 45221	Concentration and Turgor Pressure Gradients in Assimilate Partitioning	Susan A. Sovonick-Dunford	\$65,000	09/15/80	09/30/83
U. S. Dept. of Energy Oak Ridge Operations P. O. Box E Oak Ridge, Tennessee 37830	Structural Studies on Ribulosebiphosphate Carboxylase/Oxygenase	Fred C. Hartman	\$76,000	09/22/78	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Texas Tech Univ. Lubbock, Texas 79409	Factors Limiting Photo-synthetic Processes in Arid Land Cotton and Sorghum	Daniel R. Krieg	\$75,000	09/14/78	09/30/82
Univ. of Utah Salt Lake City, Utah 84112	Mechanisms of Photosynthetic Adaptation in Desert Annuals	James R. Ehleringer	\$62,000	09/14/78	09/30/82
Virginia Polytechnic Institute & State Univ. Blacksburg, Virginia 24061	Cell Cycle Regulation of 1,5-Bisphosphate Carboxylase Levels Chlorella Ribulose	Robert R. Schmidt	\$60,000	09/14/78	08/31/82
Virginia Polytechnic Institute & State Univ. Blacksburg, Virginia 24061	Activation of Ribulose 1,5-Bisphosphate Carboxylase-Oxygenase in Leaf Cells	Jerome C. Servaites	\$62,000	09/01/80	08/31/83
Washington State Univ. Pullman, Washington 99164	Metabolite Transport and Photosynthetic Metabolism to Sucrose in C ₃ , C ₄ , and CAM	Gerald E. Edwards	\$80,000	09/15/80	09/30/83
Washington State Univ. Pullman, Washington 99164	The Role of the Sieve Tube Membrane Potential in Phloem Transport	Donald B. Fisher	\$80,000	08/01/80	07/31/82
Univ. of Wisconsin Madison, Wisconsin 53706	Role of Carbon Dioxide Diffusion in C ₄ Photosynthesis	Marion H. O'Leary	\$74,000	07/15/80	06/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: PHOTOSYNTHESIS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD FROM TO
Univ. of Wisconsin Madison, Wisconsin 53706	The Energy Transducing Complex of Higher Plant Chloroplasts	Bruce R. Selman	\$79,000	09/11/78 09/30/82
Univ. of Wisconsin Milwaukee, Wisconsin 53201	Iron and Sulfur in the Photosynthetic Apparatus	Benjamin A. Feinberg	\$70,000	09/26/78 09/30/82

TOTAL: \$2,813,000

Genetic Mechanisms for Crop Improvement

Grants in this area are to encourage innovative or unique genetic approaches for the development of genetically superior varieties of agricultural crops. The desire is to obtain novel genetic combinations or gene modifications difficult or impossible to achieve using conventional plant-breeding techniques. Research areas are cell culture studies; development of cellular and molecular methods for identifying plant characteristics or genes that are significant targets for genetic manipulation; development of methods for producing, selecting, and transferring desired genetic traits; acquisition of basic information on nuclear and organelle plant gene expression and diversity at the molecular, cellular, or development level; and basic genetic studies on maintenance, alteration, and use of unadapted and wild germplasm.

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of California Davis, California 95616	Effects of Recombination Rate on Selection Response in Grain Sorghum	Ken W. Foster	\$80,000	09/15/80	09/30/84
Univ. of California Davis, California 95616	A Prokaryote/Eukaryote Gene Transfer Demonstration Using the Malo-lactic Enzyme	S. R. Snow	\$73,400	07/01/80	06/30/82
Univ. of California Davis, California 95616	Transfer of Barley Yellow Dwarf Virus Resistance from Barley to Wheat	Jan Dvorak	\$99,500	06/01/80	05/31/83
Univ. of California Davis, California 95616	Interspecific Gene Flow in Tissue/Cell Cultures and Regenerated Plants	Thomas J. Orton	\$60,000	07/15/80	07/31/82
Univ. of California Los Angeles, California 90024	Regulation of Seed Protein Gene Expression in the Soybean Plant	Robert B. Goldberg	\$100,000	09/26/78	07/31/82
USDA, SEA, AR Western Region 1333 Broadway, Suite 400 Oakland, California 94612	Regulation of Protein Biosynthesis in Wheat	Frank C. Greene	\$56,000	09/15/80	09/30/82
Western Region, AR SEA, USDA 1333 Broadway, Suite 400 Oakland, California 94612	Amino Acid Sequencing of Storage Proteins from Species of <u>Triticum</u> and <u>Aegilops</u>	Donald D. Kasarda	\$60,000	09/15/80	09/30/82
Stanford Univ. Stanford, California 94305	Development of Gene Transplant Technology for Crop Plants	Ronald W. Davis	\$100,000	09/05/78	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Yale Univ. New Haven, Connecticut 06520	Organization and Expression of the Mitochondrial Genome of <u>Nicotiana tabacum</u>	Ian M. Sussex	\$100,000	06/01/80	05/31/82
Carnegie Institution of Washington 1530 P St., N.W. Washington, D.C. 20005	Isolation and Characteri- zation of Coding Regions from Plant Genomes	William F. Thompson	\$90,000	08/28/78	09/30/82
Univ. of Florida Gainesville, Florida 32611	Inducing Polyploidy in Woody Fruit Crops with Colchicine and Tissue Culture	Paul M. Lyrene	\$69,750	06/01/80	07/31/84
Univ. of South Florida Tampa, Florida 33620	Immunoassay As a Research Technique for New and Improved Lines of Citrus	Richard L. Mansell	\$50,000	09/15/80	09/30/82
Univ. of Georgia Research Foundation Inc. Athens, Georgia 30602	Structure and Variation of Genes Associated with Photosynthesis	James R. Y. Rawson	\$80,000	09/01/80	08/31/82
Northwestern Univ. Evanston, Illinois 60201	Transfer of Genetic Material to Plants by <u>Agrobacterium</u>	James A. Lippincott	\$40,000	09/05/78	09/30/81
USDA, SEA, AR North Central Region 2000 W. Pioneer Parkway Peoria, Illinois 61614	A Genetic System to Control Rhizobium Strain Selection by Alfalfa Plants	Donald K. Barnes	\$95,000	07/15/80	07/31/83
Univ. of Illinois Urbana, Illinois 61801	Genetics of Maize - <u>Tripsacum</u> Introgression	Johannes M. J. deWet	\$100,000	09/15/80	09/30/83

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Illinois Urbana, Illinois 61801	Replication of a Single-Stranded DNA Plant Virus	Robert M. Goodman	\$137,025	09/05/78	08/31/83
Purdue Research Foundation West Lafayette, Indiana 47907	Regulation of Glycinin Synthesis in Developing Soybeans	Niels C. Nielsen	\$139,700	08/28/78	06/30/83
Univ. of Kansas Lawrence, Kansas 66045	Leaf Isozymes as Genetic Markers in Citrus Breeding	Andrew M. Torres	\$50,000	08/02/79	07/31/82
USDA, SEA, AR Northeastern Region Rm 333, Admin. Bldg. B-003, BARC-West Beltsville, Maryland 20705	Heritability and Physiology of Androgenesis and Cell Selections in Wheat	Gideon W. Schaeffer	\$67,575	09/15/80	09/30/82
USDA, SEA, AR Northeastern Region Room 333, Bldg 003 BARC-West Beltsville, Maryland 20705	Specific Gene Expression in Barley Aleurone Cells	G. R. Chandra	\$55,000	09/15/80	09/30/82
Harvard Univ. Cambridge, Massachusetts 02138	Stability of Chloroplast Genomes Introduced Into Plant Protoplasts	Frederick M. Ausubel	\$40,000	09/15/80	09/30/81
Univ. of Minnesota St. Paul, Minnesota 55114	Detection and Genetics of Amino Acid Variation in Corn Endosperm Proteins	Burle G. Gengenbach	\$100,000	09/15/80	09/30/83
University of Minnesota St. Paul, Minnesota 55114	Zein mRNAs--Nucleotide Sequences Derived from cDNAs	Irwin Rubenstein	\$70,000	01/24/80	01/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Agric. & Forestry Expt. Station Mississippi State Univ. Mississippi State, Mississippi 39762	<u>In Vitro</u> Transcription of Oat Globulin Messenger RNA	Dawn S. Luthe	\$60,000	09/15/80	09/30/82
Univ. of Nebraska Lincoln, Nebraska 68588	Fluorescent Selection of Hybrid Protoplasts	David W. Galbraith	\$50,000	07/15/80	07/31/82
Univ. of Nebraska Lincoln, Nebraska 68588	The Role of Auxin in Selective Gene Expression During Growth	Eric Davies	\$40,000	07/15/80	07/31/82
Cornell Univ. Ithaca, New York 14853	Intercellular Recognition in the Pollen-Stigma System	Donald H. Wallace	\$50,000	09/15/80	09/30/82
Rensselaer Polytechnic Institute Troy, New York 12181	Selection and Characteri- zation of Herbicide Resistant Mutants	Carl N. McDaniel	\$60,000	09/11/78	09/30/83
Brookhaven National Lab U.S. Dept. of Energy Upton, New York 11973	Construction and Characteri- zation of a Plant Cloning Vector	Daniela Sciaky	\$60,650	09/15/80	09/30/82
North Carolina State Univ. Raleigh, North Carolina 27650	Isolation of Triazine Resistant Genes in Brassica	Ronald R. Sederoff	\$75,000	08/15/80	06/30/83
ND Agric. Expt. Station North Dakota State Univ. Fargo, North Dakota 58105	Gene Transfer from Wild Grasses to Barley, <u>Hordeum</u> <u>vulgare</u> L.	Jerome D. Franckowiak	\$80,000	09/01/80	08/31/83

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Agricultural Expt. Station Oklahoma State Univ. Stillwater, Oklahoma	Transcription and Translation of the Cauliflower Mosaic Virus Genome 74074	Richard C. Essenberg	\$60,000	08/15/80	08/31/82
Oregon State Univ. Corvallis, Oregon 97331	Genetic Regulation of Hormonal Metabolism in Food Legumes	Donald J. Armstrong	\$110,000	09/05/78	09/30/82
Oregon State Univ. Corvallis, Oregon 97331	Control of Gene Expression During Maturation of the Wheat Grain	Ralph S. Quatrano	\$110,000	09/01/80	08/31/82
Univ. of Oregon Eugene, Oregon 97403	Regulation of Synthesis of Phosphoenolpyruvate Carboxylase in Maize	Donald R. Hague	\$60,000	07/01/80	06/30/82
Univ. of Oregon Eugene, Oregon 97403	Nuclear-Cytoplasmic Inheritance Among the Solanaceae	Howard T. Bonnett	\$70,000	07/01/80	06/30/82
Clemson Univ. Clemson, South Carolina 29631	Nature of Resistance to Race 2 Anthracnose in <u>Citrullus</u> Species	Billy B. Rhodes	\$54,400	07/15/80	07/31/83
Agricultural Expt. Station Univ. of Tennessee Knoxville, Tennessee	Synthesis of Nutritionally Essential Amino Acids in Developing Maize Endosperm 37901	Randolph R. Henke	\$70,000	08/15/80	08/31/82
Texas A&M Research Foundation College Station, Texas 77843	Induced Extrachromosomal Gene Amplification: Genetic Cloning Vehicles in Plants	James R. Wild	\$50,000	08/01/80	07/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: GENETIC MECHANISMS FOR CROP IMPROVEMENT

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Texas Tech Univ. Lubbock, Texas 79409	<u>In Situ</u> Localization of the Storage Protein Subunit Genes on the Polytene Chromosomes of <u>Phaseolus</u>	Thomas E. Brady	\$55,000	09/15/80	09/30/82
Univ. of Virginia Charlottesville, Virginia 22901	Protoplast Techniques for Increasing Genetic Resources for Tomato Breeding	Maureen R. Hanson	\$110,000	07/15/80	07/31/82
Washington State Univ. Pullman, Washington 99164	Transfer and Expression of Foreign Genetic Material in Plant Cells	Paul F. Lurguin	\$100,000	07/15/80	07/31/82
Univ. of Washington Seattle, Washington 98195	Comparative Analysis of DNA in Plants	Arnold J. Bendich	\$60,000	08/15/80	08/31/82
TOTAL:			\$3,298,000		

Biological Stress on Plants

Research grants in this area support studies on stresses on plants arising from their interactions with other plants or with other biological agents such as weeds, insects, nematodes, fungi, bacteria, viruses, and mycoplasma like organisms. The ultimate goal is to reduce losses in plant productivity from damage caused by biologically generated stresses.

Emphasis in this area is on studies that will enhance understanding of how stressful interactions are established between plants and other biological agents; how such interactions are influenced by environmental and other factors inherent to the interacting organisms; how the interactions reduce plant productivity and usefulness to man; how plants react to stress generated by such interactions; and how damage from such interactions may be reduced or eliminated.

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Arkansas Fayetteville, Arkansas 72701	Biological Weed Control with a Soil-borne Plant Pathogen	George E. Templeton	\$65,000	06/19/79	06/30/82
Univ. of Arkansas Fayetteville, Arkansas 72701	Specificity of Transmission of Plant Viruses by Leaf- feeding Beetles	Joseph P. Fulton	\$50,000	08/01/80	07/31/82
Univ. of California Davis, California 95616	Role of Environmental Stresses in the Development of Phytophthora Root Rot	John M. Duniway	\$70,000	07/01/80	06/30/82
Univ. of California Davis, California 95616	Molecular Aspects of Disease Stress in Higher Plants	David G. Gilchrist	\$50,000	07/01/80	06/30/82
Univ. of California Davis, California 95616	Plant Virus Infection-- Biochemical Basis and Possible Control	George E. Bruening	\$70,000	09/26/78	09/30/82
Univ. of California Davis, California 95616	Initiation and Chemical Nature of Vascular Gels in Fungal Wilt Diseases of Plants	James E. DeVay	\$65,000	07/01/80	06/30/82
USDA, SEA, AR Western Region 1333 Broadway-Suite 400 Oakland, California 94612	Glucosinolates in Brassicaceae - Production and Compartmentalization	Lynn L. Hoefert	\$50,000	08/01/80	07/31/82
San Diego State Univ. Foundation San Diego, California 92182	Biological Stress Imposed on <u>Isomeris arborea</u> by <u>Murgantia histrionica</u>	Zac Hanscom	\$50,000	09/01/80	08/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Howard Univ. Washington, D.C. 20059	Chemistry and Function of Opisthonotal Gland Secretions of Acarid Mites	Richard M. Duffield	\$50,000	07/01/80	06/30/82
Univ. of Florida Gainesville, Florida 32611	Pierce's Disease Bacterium: Virulence and Pathogenesis to Grapevine	Donald L. Hopkins	\$50,000	09/01/80	08/31/82
Institute of Food & Agric. Sciences Univ. of Florida Gainesville, Florida 32611	Soybean Responses to Stresses from Insect Defoliation and Water Deficit	Kenneth J. Boote	\$70,000	08/01/80	07/31/83
Univ. of Georgia Research Foundation Inc. Athens, Georgia 30602	Effect of Cultural and Environmental Factors on Weed Interference with Soybeans	Philip A. Banks	\$50,000	09/15/80	09/30/82
Univ. of Georgia Research Foundation Inc. Athens, Georgia 30602	Role of Endomycorrhizae in Reducing Plant Stress Induced by Pathogens	Richard S. Hussey	\$65,000	09/05/78	08/31/82
Northwestern University Evanston, Illinois 60201	Control of Insect Growth by Peptide Hormones	Walter E. Bollenbacher	\$60,000	01/24/80	01/31/82
USDA, SEA, AR North Central Region 2000 W. Pioneer Parkway Peoria, Illinois 61614	Pathogen Recognition, Hypersensitivity & Phytoalexins in Disease Resistance	John P. Helgeson	\$50,000	09/01/80	08/31/82
Univ. of Illinois Urbana, Illinois 61801	Role of Phytoalexins in Soybean Resistance to Insect Pests	Marcos Kogan	\$25,000	07/15/80	07/31/81

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Purdue Research Foundation West Lafayette, Indiana 47907	Pathogenicity of <u>Pseudomonas aeruginosa</u> in Insects	Peter E. Dunn	\$53,000	09/01/80	08/31/82
Kansas State Univ. Manhattan, Kansas 66506	Bacterial Cell Surface and Its Role in Pathogenicity of <u>Erwinia chrysanthemi</u>	Arun K. Chatterjee	\$40,000	10/01/80	09/30/82
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Regulation of The Stress Response of Potato to <u>Phytophthora Infestans</u>	Joseph Kuc	\$65,000	09/05/78	09/30/82
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Plant Antibiotic Detoxification as an Explanation of Fungal Pathogenicity	David A. Smith	\$40,000	07/15/80	07/31/81
Univ. of Maryland College Park, Maryland 20742	Mutants of <u>Spiroplasma citri</u>	Jane F. Rissler	\$3,000	09/15/80	09/30/82
Univ. of Maryland College Park, Maryland 20742	Mutants and Plasmids in Plant-pathogenic Spiroplasmas	Jane F. Rissler	\$11,000	09/15/80	09/30/82
Univ. of Massachusetts Amherst, Massachusetts 01003	Pheromonal Disruption of Apple Maggot Fly Oviposition: A Model for Key Pests	Ronald J. Prokopy	\$70,000	09/26/78	09/30/82
Univ. of Michigan Ann Arbor, Michigan 48109	Phytopathogen Virulence: A <u>Pseudomonas syringae</u> Model	Ronald H. Olsen	\$50,000	07/15/80	01/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Michigan State Univ. East Lansing, Michigan 48824	The Role of Photosensitizing Fungal Toxins in Plant Diseases	Margaret E. Daub	\$70,000	09/01/80	08/31/83
Michigan State Univ. East Lansing, Michigan 48824	Estimating Densities of Gypsy Moths and Other Lepidoptera by Pheromone Traps	Ring T. Carde'	\$70,000	07/15/80	07/31/82
Michigan State Univ. East Lansing, Michigan 48824	Energy Continuum in Apple Orchards: Effects on the Succession of Foliage Pests	Mark E. Whalon	\$60,000	07/15/80	07/31/82
Michigan State Univ. East Lansing, Michigan 48824	Biotic and Abiotic Stress Interactions Between A Small Grain Crop and an Insect Defoliator	Stuart H. Gage	\$60,000	09/01/80	08/31/82
Michigan State Univ. East Lansing, Michigan 48824	Exploitation of Allelopathy for Weed Control in Agroecosystems	Alan R. Putnam	\$65,000	09/05/78	09/30/82
Univ. of Minnesota St. Paul, Minnesota 55114	Host Membrane Permeability in Powdery Mildew of Barley	Edward J. Stadelmann	\$70,000	09/01/80	08/31/82
Agricultural & Forestry Expt. Station Mississippi State Univ. Mississippi State, Mississippi 39762	Pharmacological Characteri- zation of the Sugar Receptor in Two Insect Pests	James L. Frazier	\$44,000	08/01/80	07/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Missouri Columbia, Missouri 65211	Genetic Elements Controlling Virulence of Plant Pathogenic Bacteria	Donald J. Merlo	\$24,000	07/09/79	06/30/81
Washington Univ. St. Louis, Missouri 63130	Cofactor Complex Controlling Responses to Wounding by Pathogens and Herbivores	Barbara G. Pickard	\$70,000	07/01/80	06/30/82
Rutgers-The State Univ. New Brunswick, NJ 08903	Ratoon Stunting Disease: Etiology and Mechanism of Pathogenesis	Michael J. Davis	\$50,000	07/01/80	06/30/82
Univ. of Nevada Reno, Nevada 89557	Biosynthesis of Insect Waxes: Potential for Insect Control	Gary J. Blomquist	\$70,000	09/05/78	08/31/82
New York State Agric. Expt. Station Cornell Univ. Ithaca, New York 14853	Pheromones/Kairomones of Scale Insect Pests	Wendell L. Roelofs	\$25,000	09/05/78	09/30/81
Cornell Univ. Ithaca, New York 14853	The Importance of Phytoalexin Tolerance for Pathogenicity	Hans D. VanEtten	\$70,000	08/01/80	07/31/82
Boyce Thompson Institute for Plant Research Ithaca, New York 14853	Control of Germination in the Downy Mildew Fungus, <u>Peronospora manshurica</u>	Vladimir Macko	\$45,000	07/01/80	06/30/82
Cornell Univ. Ithaca, New York 14853	Interactions of Plant Viruses With Their Hosts	Milton Zaitlin	\$40,000	09/05/78	08/31/81

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Boyce Thompson Institute for Plant Research Cornell Univ. Ithaca, New York 14853	A Natural Egg-Laying Deterrent Affecting Host Selection by the Cabbage Looper	J. A.A. Renwick	\$50,000	07/01/80	06/30/82
Cornell Univ. Ithaca, New York 14853	Plant Glandular Trichomes: A Mechanism for Combatting Insect Stress	Ward M. Tingey	\$70,000	09/11/78	09/30/82
Boyce Thompson Institute for Plant Research Tower Road Ithaca, New York 14853	Colorado Potato Beetle Management Using an Entomopathgenic Fungus	Donald W. Roberts	\$50,000	10/01/80	09/30/82
Cornell Univ. Ithaca, New York 14853	Genetic Transformation and Molecular Basis of Virulence in <u>Helminthosporium maydis</u>	O. C. Yoder	\$70,000	08/28/78	09/30/82
Cornell Univ. Ithaca, New York 14853	Biological Controls for Fire Blight	Steven V. Beer	\$70,000	08/08/79	09/30/82
Rockefeller Univ. New York, New York 10021	Molecular Basis of Viroid Multiplication and Disease Induction in Plants	Elizabeth Dickson	\$70,000	09/14/78	09/30/82
North Carolina State Univ. Raleigh, North Carolina 27650	Spatial Dynamics of the Twospotted Spider Mite	George G. Kennedy	\$65,000	09/01/80	08/31/83
Ohio State Univ. Research Foundation Columbus, Ohio 43212	Control of Insect Populations by Regulation of Dormancy	David L. Denlinger	\$50,000	09/05/78	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Ohio Agricultural Research & Development Center Wooster, Ohio 44691	Effect of Lesion Nematode Stress on Development of Early Dying Disease on Potato	Richard M. Reidel	\$70,000	09/01/80	08/31/83
Oklahoma State Univ. Stillwater, Oklahoma 74074	Intraspecific Competitive Stress to Enhance Crop Production	John F. Stone	\$50,000	07/15/80	12/31/81
Oregon State Univ. Corvallis, Oregon 97331	Electrical Nature of Spore Discharge by Fungi That Cause Crop Diseases	Charles M. Leach	\$60,000	08/01/80	07/31/83
Oregon State Univ. Corvallis, Oregon 97331	Role of Pseudomonas Plasmid Genes in Host- Pathogen Interaction	Dallice Mills	\$70,000	07/15/80	07/31/82
Univ. of Texas at Austin Austin, Texas 78712	The Role of Plant Stress in Grasshopper Outbreaks	Michael C. Singer	\$20,000	08/01/80	07/31/81
Utah State Univ. Logan, Utah 84322	The Mechanism of Pathogen Induced Water Stress in Alfalfa	Neal K. Van Alfen	\$65,000	09/05/78	09/30/82
Washington State Univ. Pullman, Washington 99164	Ecological Consequences of Alternate Modes of Herbivory: Willows and Sawflies	Linda R. Moore	\$53,000	07/01/80	06/30/82
Washington State Univ. Pullman, Washington 99164	Elucidation and Counter- action of Insect Resistance to Microbial Pesticides	Kemet D. Spence	\$50,000	09/15/80	08/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: BIOLOGICAL STRESS ON PLANTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Washington Seattle, Washington 98195	Development Physiology of Lepidopteran Larvae and Their Parasites	Lynn M. Riddiford	\$70,000	09/26/78	09/30/82
Univ. of Washington Seattle, Washington 98195	Mode of Action of the Phytotoxin Fusicoccin	Robert E. Cleland	\$50,000	09/01/80	08/31/82
Univ. of Wisconsin Madison, Wisconsin 53706	Studies of the Structure of the Genetic Material of Plant Viruses	Paul J. Kaesberg	\$70,000	09/05/78	07/31/82
Univ. of Wisconsin Madison, Wisconsin 53706	Pea Enation Mosaic Virus Replicase, Its Isolation and Characterization	Gustaaf A. de Zoeten	\$50,000	09/01/80	08/31/82
Univ. of Wisconsin Madison, Wisconsin 53706	Disruption of Mitochondrial Functions by Allelopathic Compounds	Nelson E. Balke	\$70,000	09/05/78	09/30/82

TOTAL: \$3,298,000

Human Nutrition

The emphasis in this program is on determining human nutrient requirements. Support is not provided for clinical research or for demonstration or action projects.

Research in human nutrition will contribute to improving human nutritional status by increasing our understanding of requirements for nutrients in relation to different patterns of food intake. Findings will help fill the gaps of our knowledge related to nutrient requirements, bioavailability, the inter-relationships of nutrients, and the nutritional value of foods consumed in the United States as they relate to these requirements. Special attention in this program is given to the study of trace constituents of foods and their effect on human health.

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of California Berkeley, California 94720	Use of Stable Isotopes to Determine Dietary Requirements of ZN, FE, CR, CA & MG	Janet C. King	\$130,000	09/15/80	09/30/83
Univ. of California Davis, California 95616	Analysis and Bioavailability of Food Foliates	Andrew J. Clifford	\$115,000	09/05/78	09/30/82
Univ. of California, San Diego La Jolla, California 92093	Effects of Subtoxic Amounts of Selenium and Lead on Tumors in Mice	Gerhard N. Schrauzer	\$25,000	08/01/80	07/31/81
Univ. of California Los Angeles, California 90024	Assessment of Zinc Nutriture in Low Income Pregnant Women and Their Infants	Isabelle F. Hunt	\$190,000	09/14/78	09/30/82
USDA, SEA, AR Western Region 1333 Broadway, Suite 400 Oakland, California 94612	Monoclonal Antibodies for Immunoassay of Vitamins	David L. Brandon	\$94,000	08/15/80	08/31/82
George Washington Univ. Washington, D.C. 20052	Platelet Glutathione Peroxidase as an Index of Dietary Selenium Status	Robert W. Bryant	\$78,000	09/01/80	08/31/82
USDA, SEA, AR North Central Region 2000 West Pioneer Parkway Peoria, Illinois 61614	Dietary Cereals and Fungal by Products Cholesterol Regulation	Warren C. Burger	\$80,000	09/15/80	09/30/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Purdue Research Foundation West Lafayette, Indiana 47907	Factors Influencing the Nutrient Intake and Growth of Breast-Fed Infants	Avanelle Kirksey	\$150,000	09/01/80	08/31/83
Tulane Univ. School of Public Health and Tropical Medicine New Orleans, Louisiana 70112	Relationship of Zinc Nutriture to Outcomes in Adolescent Pregnancy	Flora F. Cherry	\$5,000	08/28/79	08/31/81
The Johns Hopkins Univ. Baltimore, Maryland 21218	Radiometric Microbiologic Assay of B Vitamins in Food	Patricia A. McIntyre	\$30,000	08/28/78	09/30/81
The Johns Hopkins Univ. Baltimore, Maryland 21218	Protein Requirements of Infants and Children	George G. Graham	\$160,000	09/19/78	09/30/82
USDA, SEA, AR Northeastern Region Room 333, Admin. Bldg. B-003, BARC-West Beltsville, Maryland 20705	Relation of Zinc Status in Vivo to Growth of Epidermal Cells in Culture	B. Jean Apgar	\$80,000	09/15/80	09/30/83
Univ. of Maryland College Park, Maryland 20742	Zinc, Selenium and Chromium Nutrition in Term and Pre-Term Infants	Glen E. Gordon	\$43,000	09/15/80	09/30/81
Harvard College Cambridge, Massachusetts 02138	Diet, Lipemia, and Intestinal Lipoproteins	Robert J. Nicolosi	\$140,000	08/15/80	08/31/83

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Massachusetts Inst. of Technology Cambridge, Massachusetts 02139	Maternal/Fetal Vitamin A Requirements Evaluated by RDR Assessment	Barbara A. Underwood	\$190,000	09/05/78	09/30/82
Univ. of Missouri Columbia, Missouri 65211	Rapid Determination of Mammalian Bioavailability of Vitamin B ₆	Bob In-yu Yang	\$45,000	09/01/80	08/31/82
St. Louis Univ. School of Medicine St. Louis, Missouri 63104	Human Requirements for Vitamin K	Robert E. Olson	\$100,000	08/01/80	07/31/82
St. Louis Univ. St. Louis, Missouri 63104	Interrelationship of Iron and Vitamin E	Coy D. Fitch	\$120,000	09/15/80	09/30/82
Rutgers, The State Univ. New Brunswick, New Jersey 08903	Amino Acid Requirements: Variation Due to Environmental and Nutritional Factors	Hans Fisher	\$103,000	09/15/80	09/30/83
The Rockefeller Univ. New York, New York 10021	Effects of Nutrition on Adipose Tissue Growth and Development	Irving M. Faust	\$35,000	08/15/80	08/31/81
St. Luke's-Roosevelt Inst. for Health Sciences New York, New York 10025	Biochemical Assessment of Human Chromium Nutritional Status	F. Xavier Pi-Sunyer	\$120,000	09/01/80	08/31/82

COMPETITIVE RESEARCH GRANTS PROGRAM
PROGRAM AREA: HUMAN REQUIREMENTS FOR NUTRIENTS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Rochester Rochester, New York 14642	Effect of Carbohydrate Ingestion on Metabolic Rates of Humans	Robert G. Campbell	\$60,000	08/01/80	07/31/82
Univ. of North Dakota Grand Forks, North Dakota 58202	Competitive Biochemistry of Copper and Zinc Binding Ligands in Biological Fluids	Francis A. Jacobs	\$160,000	08/15/80	08/31/83
Webb Associates, Inc. P.O. Box 308 Yellow Springs, Ohio 45387	Energy Balance in Man during Undereating: A Calorimetric Study	Paul Webb	\$190,000	09/19/78	12/31/81
School of Agriculture Oregon State Univ. Corvallis, Oregon 97331	Dietary Selenium Requirements for Pregnant Women	Martha J. Tripp	\$125,000	09/15/80	09/30/83
The Wistar Institute 36th Street at Spruce Philadelphia, Pennsylvania 19104	Effect of Type and Amount of Dietary Protein on Experimental Atherosclerosis	David Kritchevsky	\$90,000	08/01/80	07/31/83
Texas Tech Univ. Lubbock, Texas 79409	Interactions and Bioavail- ability in Rats of Chromium from Meat and TVP Sources	Barbara J. Stoecker	\$65,000	09/01/80	08/31/82
Virginia Polytechnic Institute & State Univ. Blacksburg, Virginia 24061	HPLC Analysis of Vitamin B ₆ Components in Plasma -- A Status Indicator	Judy A. Driskell	\$90,000	08/01/80	07/31/82

TOTAL: \$2,813,000

SPECIAL RESEARCH GRANTS PROGRAM

The objective of this grant program is to carry out research to facilitate or expand promising breakthroughs in areas of food and agricultural sciences of importance to the Nation. Three major areas of research were funded under this program during Fiscal Year 1980:

Soybean research	\$ 485,000
Energy research	1,843,000
Animal health research	<u>6,790,000</u>
TOTAL	\$ 9,118,000

This program is administered under the authority of Section 2(c) (1) of P.L. 89-106, as amended by Section 1414 of P.L. 95-113. Eligible institutions include land-grant colleges and universities, State agricultural experiment stations, and all colleges and universities having demonstrable capacity in food and agricultural research.

A brief description of each area of research in the Special Research Grants program follows with a listing of research grants made in each area for FY 1980.

Soybean Research

The objective of this research is to increase soybean production and conserve natural resources. Two areas of research were funded under this topic: (1) Soybean production research to increase yields, enhance production efficiency, and conserve natural resources; and (2) research on soybean genetic mechanisms that contribute to yield or tolerance to biotic and abiotic stress.

Soybean acreage in 1979 exceeded that of any other crop in the U.S. The high protein meal and

edible soybean oil provide the raw material for a diversity of agricultural and industrial uses. This program of research grants is aimed at identifying some of the factors limiting further production increases for this very versatile crop. Once these factors are identified, scientists should be able to develop techniques for getting around them. Past increases in productivity have been significant--with an average per-acre per-year increase of 0.4 bushels for the past 30 years. The desire is to continue this progress as much as possible.

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: SOYBEAN RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Agricultural Experiment Station Michigan State Univ.	Transport, Utilization and Loss of C and N Assimilates by Stressed Soybean Roots	Alvin J.M. Smucker	\$88,167	05/01/80	04/30/82
Ohio Agricultural Research & Development Center	Heritability and Biochemical Mechanism of Tolerance to Phytophthora in Soybeans	Alan K. Walker	\$75,993	10/01/80	09/30/82
Purdue Univ.	Root Growth, Morphology and Nutrient Absorption Kinetics and Soybean Yield	Stanley A. Barber	\$78,623	07/01/80	06/30/83
Agricultural Experiment Station University of California	Sensitivity of Symbiotic Soybeans to Soil Stress	Donald N. Munns	\$55,346	06/01/80	07/30/84
Agricultural Experiment Station University of Kentucky	Partitioning of Photo- synthate Between Vegetative and Reproductive Growth	Dennis B. Egli	\$89,900	06/01/80	05/31/85
University of Minnesota	Hormonal Relations of Soybean Flower and Pod Abortion	William A. Brun	\$96,971	07/01/80	06/30/83
TOTAL:			\$485,000		

Energy Research

The overall objective of this research is to gain knowledge and technical information that would reduce the petrochemical energy used in agriculture, forestry, and other rural activities.

Grants were made in four areas. The first was for fermentation research with alcohols other than ethanol and hydrocarbons. Research was to relate to hydrolysis, fermentation, and anaerobic digestion; extraction, product separation, and purification; and blending, marketing, and use of the products.

The second area was combustion and pyrolysis. This involves research on direct burning, extraction of petrochemical substitutes, gasification, pyrolysis, transformation, and use of abundant domestic carbonaceous sources for agriculture.

The third area was energy conservation and development of solar and wind energy sources. The objective is to develop ways to economically substitute wind and solar energy in crop drying, heating livestock shelters and greenhouses, irrigation pumping, and other rural home and agricultural uses.

The fourth area concerned research grants for biomass screening and use studies. Involved in this research is the comparison and choice of species and varieties for energy value; and the production, assembly, and storage of biomass for energy use.

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ENERGY RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Arizona State Univ.	Liquid Hydrocarbon Fuel Potential of Agricultural Materials	James L. Kuester	\$122,979	06/01/80	05/31/83
Agricultural Experiment Station Univ. of Florida	Methane Production from Aquatic Plants and Vegetable Crop Residue	Konda R. Reddy	\$79,371	06/01/80	05/31/83
Agricultural & Home Economics Experiment Station Iowa State Univ.	Production by Fermentation of Lipids for Energy	Bonita A. Glatz	\$99,840	06/01/80	05/31/83
Kansas State Univ.	Furnace Testing of the Combustion Characteristics of Agricultural Dusts	Thomas W. Lester	\$100,000	07/01/80	06/30/82
Michigan State Univ.	Technology for Selection and Management of Solar Energy Grain Drying Equipment	Roger C. Brook	\$39,973	06-01-80	05/31/83
Ohio Agricultural Research and Development Center	A Solar Pond for Winter Heating of Greenhouses and Rural Residences	Ted H. Short	\$80,000	07/01/80	06/30/82
Ohio Agricultural Research and Development Center	Sunflower Oil as a Direct, Liquid, Agricultural Fuel in the Eastern Corn Belt	Warren L. Roller	\$28,715	07/01/80	06/30/81
Agricultural Experiment Station Oklahoma State Univ.	Dehumidifying Livestock Housing Using Solar Energy to Regenerate Desiccant	Gerald H. Brusewitz	\$28,361	06/01/80	05/31/81

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ENERGY RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Pennsylvania State Univ.	Screening Populus Species Biomass for Use as a Source of Energy	Todd W. Bowersox	\$80,000	09/01/80	08/31/82
Purdue Univ.	Development of Methods and Equipment for Salvaging Corn Cobs for Energy	John B. Liljedahl	\$50,520	09/01/80	08/31/82
State Univ. of New York	Solar Energy Conversion to Fermentation Products by Linked Biological Processes	Stuart W. Tanenbaum	\$90,563	06/01/80	05/31/82
Agricultural Experiment Station Texas A&M Univ.	Cleanup of Gasses Produced from Gasification of Agricultural Biomass	Wayne A. LePori	\$29,663	06/01/80	05/31/82
Agricultural Experiment Station Texas A&M Univ. System	Diesel Fuels from Pine Pyrolytic Oils	Ed J. Soltes	\$124,998	06/01/80	05/31/82
Univ. of California	Gas Producer Retrofitted Portable Natural Gas Engine Farm Irrigation Power Plant	John R. Goss	\$125,000	07/01/80	06/30/82
Agricultural Experiment Station College of Tropical Agric. & Human Resources Univ. of Hawaii	Fuelwood Productivity of Fast-growing Subtropical Tree Legumes	James L. Brewbaker	\$79,905	07/01/80	06/30/83
Agricultural Experiment Station Univ. of Illinois	Hydrogen and Protein by Off-Peak Depolarized Electrolysis of Biomass	Donald L. Day	\$96,000	06/01/80	05/31/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ENERGY RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Agricultural Experiment Station Univ. of Illinois	Combustion of Agriculturally-Derived, Nonpetroleum Fuel in Diesel Engines	Carroll E. Goering	\$79,360	09/01/80	08/31/83
Univ. of Minnesota	Swine Production Facilities Using No Fossil Fuel	Kenneth A. Jordan	\$80,000	07/01/80	06/30/83
Univ. of Minnesota	Integrating the Production, Transportation and Handling of Wood to Meet Competing Needs	Dietmar W. Rose	\$69,489	06/01/80	05/31/82
Univ. of Missouri	Energy Management in a Bio-Gas-Ethanol Production Unit	F. D. Harris	\$79,976	07/01/80	06/30/83
Univ. of Missouri	Microbiology of the Mesophilic, Anaerobic Digestion of Swine Manure to Methane	Eugene L. Iannotti	\$99,724	09/01/80	08/31/83
Univ. of Nebraska	Nitrogen Fixation with Wind Energy	C. Wayne Martin	\$79,690	06/01/80	05/31/82
Agricultural Experiment Station Virginia Polytechnic Inst. & State Univ.	Cellular Regulation of Butanol-Isopropanol Fermentation	Jiann-Shin Chen	\$98,873	07/01/80	06/30/83

TOTAL: \$1,843,000

Animal Health

Overall, this research is to develop and/or refine abiotic and biotic methods to suppress animal losses from infectious and noninfectious diseases and internal and external parasites. The research is directed toward clarifying infectious and noninfectious diseases and parasites and their interactive effects on animal health; and to develop practical and implementable management systems for the producer to prevent or alleviate these causes of animal losses.

Priority in the infectious disease proposals was given to those dealing with beef cattle, swine, poultry, dairy cattle, horses, and aquaculture.

Priority in internal parasite proposals was given to those designed to prevent or control internal parasites through clarification of host-parasite relationships, novel management methods minimizing exposure to infectious parasitic states, and immunological or other biological, or nonchemical-biological, control systems. Beef cattle, sheep, major aquaculture species, and coccidiosis in poultry were to be studied.

In external parasite research, only experiments with cattle or major aquaculture species were considered. Priority was given to proposals to develop integrated methods of prevention or suppression of external parasites. The goal was to minimize chemical use. Proposals were to be directed at developing injury threshold, including research on appropriate sampling methods.

A final area of research proposals under this topic dealt with noninfectious diseases and predator losses. Research proposals could cover prevention of predator losses in sheep and goats, anestrus of dairy cattle, mycotoxicosis of poultry, or musculoskeletal disease of horses.

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
North Carolina Agric. Research Service North Carolina State Univ.	Virulence Mechanisms in Turkey Rhinotracheitis (Coryza) Applicable to Control	Geraldine H. Luginbuhl	\$65,000	07/01/80	06/30/82
Agricultural Experiment Station Auburn Univ.	The Carrier State of Swine Dysentery	Lawrence F. Fisher	\$32,672	06/01/80	05/31/82
Agricultural Experiment Station Auburn Univ.	Infectious Bovine Rhino- tracheitis Virus, Latency, and Respiratory Disease	Charles R. Rossi	\$125,924	06/01/80	05/31/83
Auburn Univ.	Transmission and Immunology of Channel Catfish Virus Disease of Cultured Catfish	John A. Plumb	\$100,000	07/01/80	06/30/83
Auburn Univ.	Immunologic and Pathologic Responses of Calves to <u>Cooperia oncophora</u>	G. W. Benz	\$121,512	06/01/80	05/31/83
Colorado State Univ.	Therapy of Vascular and Hepatic Alterations Due to Endotoxemia	Robert W. Phillips	\$149,407	07/01/80	06/30/82
Colorado State Univ.	Chronic Congenital Blue- tongue in Cattle After Exposure in Utero	Richard A. Bowen	\$146,102	09/01/80	08/31/83
Colorado State Univ.	Pyometra-Metritis Complex - Epidemiology, Etiology, Physiopathology and Control	Leslie Ball	\$148,754	09/01/80	08/31/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Colorado State Univ.	Resistance Factors in Coronaviral Enteritis of Calves and Piglets	Johannes Storz	\$130,000	07/01/80	06/30/84
Cornell Univ	Bovine Brucellosis: Use of Purified Antigens in Diagnosis and Vaccination	Alexander J. Winter	\$145,098	09/01/80	08/31/83
Cornell Univ.	Productive Disorders, Owner Decisions and Dairy Herd Fertility and Productivity	H. N. Erb	\$112,000	09/01/80	08/31/83
Cornell Univ.	Factors Influencing the Anti- biotic Resistance of Bacterial Agents of Mastitis	Gary M. Dunny	\$73,266	09/01/80	08/31/82
Cornell Univ.	Mechanisms for Transport and Penetration of Organisms Through the Streak Canal	Norman R. Scott	\$98,616	09/01/80	08/31/82
Cornell Univ.	Safety and Efficacy of Temperature-Sensitive Equine Influenza Vaccine	Leroy Coggins	\$108,365	09/01/80	08/31/83
Hampshire College	Predator Control with Live- stock Guarding Dogs	Raymond P. Coppinger	\$110,000	07/01/80	06/30/83
Kansas State Univ.	Development of a Quantita- tive Model for Integrating Face Fly Control Strategies	Alberto B. Broce	\$117,078	09/01/80	08/31/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
School of Veterinary Medicine Louisiana State Univ.	Seasonal Transmission and Control of Bovine Liver Flukes	John B. Malone	\$145,853	07/01/80	06/30/83
School of Veterinary Medicine Louisiana State Univ.	Prevention of Predator Losses in Louisiana Dairy Goats	William T. Hubbert	\$4,781	07/01/80	12/31/81
Louisiana AES Center for Ag Sci & Rural Dev. Louisiana State Univ. & A&M College	Reoviruses and Nutritional Factors in Disease and Serologic Responses in Chickens	Wilfred T Springer	\$41,280	07/01/80	06/30/82
Louisiana AES Cntr for Ag Sci. & Rural Dev. Louisiana State Univ. & A&M College	Control of Gastrointestinal Nematodes of Cattle by Management Practices	James C. Williams	\$149,884	09/01/80	08/31/83
Agricultural Experiment Station Michigan State Univ.	Sampling and Dispersal in the Development of an Integrated Fly Control Program	Richard W. Merritt	\$133,678	07/01/80	06/30/82
Michigan State Univ.	Piliated <u>Escherichia coli</u> and Porcine Enteric Disease in Michigan	Glenn L. Waxler	\$57,275	09/01/80	08/31/82
New York Univ. Medical Center	Development of Testing of Genetically Constructed <u>E.</u> <u>coli</u> Vaccine Strains	Werner K. Maas	\$104,523	07/01/80	06/30/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
North Carolina Agric. Research Service North Carolina State Univ.	Prevention and Control of Microbial Enteric Infections in Weanling Pigs	James G. Lecce	\$107,560	06/01/80	05/31/83
Ohio Agricultural Research & Development Center	Etiology and Pathogenesis of Turkey Coryza	Y. M. Saif	\$50,000	07/01/80	06/30/83
Ohio Agricultural Research & Development Center	Immunity to Coliform Mastitis in Dairy Cattle	K. Larry Smith	\$124,313	07/01/80	06/30/82
Ohio Agricultural Research & Development Center	Epizootiology of Bovine Rotaviral Infections	Kenneth W. Theil	\$115,556	07/01/80	06/30/83
Ohio Agricultural Research & Development Center	Immune Responses of Calves Vaccinated Intradermally with <u>Pasteurella hemolytica</u>	Clyde K. Smith	\$81,061	07/01/80	06/30/83
Oklahoma State Univ.	Growth and Development of <u>Anaplasma marginale</u> in Ixodid Ticks	Katherine M. Kocan	\$150,000	07/01/80	06/30/83
Oklahoma State Univ.	The Intestinal Glycocalyx, a Resistance Mechanism to Swine Enteric Disease	Theodore E. Staley	\$112,500	07/01/80	06/30/83
Pennsylvania State Univ.	Perinatal Cellular Immune Responses of Fetal and Neonatal Piglets and Sows	Frederick G. Ferguson	\$89,720	09/01/80	08/31/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD FROM TO
Purdue Univ.	Transmission of Viral Disease Through Embryo Transfers	Donald P. Gustafson	\$124,038	09/01/80 08/31/82
Louisiana AES Cntr for Agric. Sciences & Rural Dev. Louisiana State Univ. & A&M College	Bovine Respiratory Diseases: Pathogenesis and Role of Interferon	Robert W. Fulton	\$100,000	07/01/80 06/30/83
Agricultural Experiment Station South Dakota State Univ.	Advancement of Face Fly Methodology for Use in Sampling and Trapping Integrated Control Programs	Emmett R. Easton	\$62,300	06/01/80 05/31/83
Agricultural Experiment Station Texas A&M Univ. System	Etiologic and Immunologic Aspects of Respiratory Diseases in Sheep and Goats	Harland W. Renshaw	\$149,281	09/01/80 08/31/84
Agric Expt Stn Texas A&M Univ. System	Hemostasis, Hemodynamics, and Prostaglandin Metabolites in Equine Laminitis	David M. Hood	\$143,129	06/01/80 05/31/82
Texas Tech Univ.	Selectivity and Effectiveness of Drop Baits for Depredation Control	Frederick S. Guthery	\$68,814	07/01/80 12/31/82
Tuskegee Institute	An Evaluation of Cell- Mediated Immune Response as a Diagnostic Tool for Swine Dysentery	Edward M. Jenkins	\$50,000	07/01/80 06/30/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Agricultural Experiment Station Univ. of Arizona	Colostrokinin as a Mediator in the Transfer of Passive Immunity	Gerald H. Stott	\$145,645	07/01/80	06/30/83
Univ. of California	Interferon and Immune Responses of the Bovine Fetus to Bluetongue Virus	Bennie I. Osburn	\$109,258	07/01/80	06/30/82
Univ. of California	Leukocyte Functions of Coliform Mastitis	Edward J. Carroll	\$134,241	07/01/80	06/30/83
Univ. of California	Selective Control of Coyotes with Chemosterilants and Toxicants	Walter E. Howard	\$80,000	07/01/80	06/30/83
Univ. of California	Genetic Influence on Infectivity of Infectious Bursal Virus for Chickens	Richard Yamamoto	\$35,500	07/01/80	12/31/81
Agric. Expt. Stn. Univ. of Delaware	Effect of Virus Passage and Antibody on Infectious Bronchitis Variant Emergence	Jack Gelb	\$40,210	07/01/80	06/30/83
Institute of Food & Agric. Sciences Univ. of Florida	Development of a Vaccine Against <u>Haemonchus contortus</u> in Sheep	John T. McL. Neilson	\$142,456	09/01/80	08/31/83
Univ. of Georgia	Immunologic Responses of Channel Catfish, <u>Ictalurus punctatus</u> , to Heterologous Antiprotozoan Immunization	Donald L. Dawe	\$137,389	07/01/80	06/30/83

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Georgia	Anti-viral sIgA Induction In the Protection of Baby Pigs Against Viral Enteritis	Eduard V. De Buysscher	\$60,000	08/01/80	07/31/83
Univ. of Georgia	Effects of Infectious Bursal Disease of Turkeys on Newcastle Disease and Avian Influenza	Phil D. Lukert	\$60,000	07/01/80	06/30/83
Univ. of Georgia	Vaccine Failures in Chickens Immunized with the Turkey Herpes Virus Vaccine	Caswell S. Eidson	\$90,000	07/01/80	06/30/83
Univ. of Georgia	Aflatoxin Resistance in Commerical Broiler Chickens by Genetic Selection	Roger D. Wyatt	\$102,178	07/01/80	06/30/84
Univ. of Georgia	Enzyme Immunoassay for Infectious Bronchitis and Avian Encephalomyelitis of Poultry	William L. Ragland	\$61,090	09/01/80	08/31/83
Univ. of Illinois	Coliform Endotoxins in MMA Sows	Lennart R. Backstrom	\$30,280	07/01/80	06/30/81
Univ. of Illinois	Detection of Estrus in Stanchioned Dairy Cattle by Monitoring Behavioral Traits	Howard L. Whitmore	\$135,000	07/01/80	06/30/83
Univ. of Illinois	Endotoxin Absorption from the Cecum and Lactation Failure in the Sow	Walter C. Wagner	\$74,157	07/01/80	06/30/82

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Univ. of Kansas	Inhibition of Newcastle Disease Virus Replication by Defective Virus Particles	Henry O. Stone	\$90,000	07/01/80	06/30/83
Agricultural Experiment Station Univ. of Kentucky	Role of Endorphins and Naloxone in Pathogenesis and Treatment of Endotoxin Shock	Thomas Tobin	\$47,587	06/01/80	05/31/81
Agricultural Experiment Station Univ. of Kentucky	Initiating Ovarian Cycles and Behavioral Estrus in Anestrus Dairy Cattle	Lee A. Edgerton	\$90,000	06/01/80	05/31/84
Univ. of Maine	Serological Methods for Detection and Identification of Virus Diseases of Fish	Bruce L. Nicholson	\$100,000	09/01/80	08/31/83
Univ. of Maryland	Pathogenicity and Immunity: Respiratory Diseases Caused by Equine Herpesviruses	Sukanta K. Dutta	\$98,972	09/01/80	08/31/83
Univ. of Minnesota	Epizootiology of Avian Influenza in Turkeys	John A. Newman	\$66,000	07/01/80	06/30/82
Univ. of Minnesota	Prevention of Anestrus in Stanchioned Dairy Cattle with Prostaglandin	Bradley E. Seguin	\$120,000	07/01/80	06/30/83
Univ. of Missouri	Effect of Subclinical Mycotoxosis on IBR Defense Mechanisms of Cattle	Gerald M. Buening	\$66,267	07/01/80	06/30/83

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ANIMAL HEALTH RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Nebraska	Lung Water and Respiratory Disease Susceptibility in Young and Feeder-age Calves	James F. Amend	\$149,401	07/01/80	06/30/84
Univ. of Pennsylvania	Development of Automated Serologic Test System to Monitor Antibody in Poultry	Robert J. Eckroade	\$50,000	07/01/80	12/31/81
Univ. of Wisconsin System	Effect of Toxic Metabolites Elaborated by <u>Alternaria</u> spp. on Poultry	Fun S. Chu	\$137,000	07/01/80	06/30/83
Utah State Univ.	Efficacy of Removing Coyote Litters in Reducing Depredations on Domestic Sheep	Barrie K. Gilbert	\$88,000	07/01/80	04/30/82
Virginia Polytechnic Institute & State Univ.	Immunopotential of Poultry to Enhance Resistance to Respiratory Diseases	Gerhardt G. Schurig	\$35,434	07/01/80	06/30/82
Washington State Univ.	Bovine Anaplasmosis	Mack I. Johnson	\$144,109	07/01/80	06/30/82
Washington State Univ.	Failure of Colostral Immunoglobulin Transfer to New born Calves	Clive C. Gay	\$97,091	07/01/80	08/31/82
West Virginia Univ.	Use of Estrogen and Prostaglandin in Preventing Anestrus Dairy Cattle	Robert A. Dailey	\$23,395	06/01/80	05/31/82
TOTAL:			\$6,790,000		

ALCOHOLS AND INDUSTRIAL HYDROCARBONS PROGRAM

This program provided support for research for two areas of concentration--alcohols research and ethyl alcohol conversion. The last covers the evaluation, production, handling, treatment, and conversion of biomass resources for manufacture of ethyl alcohol.

Alcohol continues to be the most promising short-term route to agricultural synfuel production. There remain many unsolved problems in its production, fermentation, byproduct handling, distillation, and use both on the farm and off.

The United States--and rural America--has the potential for the production of significant amounts of energy from biomass converted into alcohol that could make an important contribution to more stable and constant energy sources for our Nation.

Grants for alcohols research in FY 1980 totaled \$485,000.

Alcohol research is authorized under Section 1419 of P.L. 95-113. Grants may be made to any college or university. Research foundations are not eligible unless they independently meet the definitions of eligible institutions as set out in Section 1404 of P.L. 95-113.

SPECIAL RESEARCH GRANTS PROGRAM
PROGRAM AREA: ALCOHOL RESEARCH

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Agriculture & Economics Expt. Station Iowa State Univ.	Continuous On-Farm Corn- Alcohol Production at 12 gpd: Energy and Management Needs	Wesley F. Buchele	\$100,000	10/01/80	09/30/82
Purdue Univ.	Engineering Studies on A new Way to Dehydrate Ethyl Alcohol with Corn	Michael R. Ladisch	\$91,967	09/01/80	08/31/82
Rutgers Univ.	Production of a High Concen- tration of Ethyl Alcohol from Carbohydrates	Shaw S. Wang	\$99,202	07/01/80	06/30/82
South Dakota State Univ.	Fuel Alcohol Production by an Operating Farm Scale Plant: A Cost and Energy Study	Paul R. Middaugh	\$93,831	07/01/80	06/30/82
Agriculture Experiment Station Univ. of Nebraska	Precipitation of Ethanol Stillage to Improve Protein and Recycle Water	Terry J. Klopfenstein	\$100,000	07/01/80	06/30/83
TOTAL:			\$485,000		

NATIVE LATEX RESEARCH GRANTS PROGRAM

These funds support research on breeding and selection and agronomic projects on Parathenium argentatum or small related species of rubber-producing plants. This research is of interest to both the United States and Mexico. Therefore, the awards stress cooperative research between U.S. and Mexican scientists. Scientists are expected to share any plant materials collected or produced from these cooperative research projects. Also, the U.S. grantees are to make available one or more research positions to qualified visiting Mexican scientists for periods of up to a year.

Grants for native latex research totaled \$630,500 in FY 1980.

The native latex program is authorized by Section 9 of P.L. 95-592 (7 U.S.C. 178(g)). Eligible institutions include States, education institutions, scientific organizations, and Indian tribes as defined in P.L. 95-638 (25 U.S.C. 450).

NATIVE LATEX RESEARCH GRANTS PROGRAM
PROGRAM AREA: GUAYULE (NATIVE LATEX):
AGRONOMIC PRACTICE, BREEDING AND SELECTION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Arizona Tucson, Arizona 85721	Identification and Control of Guayule Diseases	Stanley M. Alcorn	\$70,600	09/01/80	08/31/81
Univ. of Arizona Tucson, Arizona 85721	Seed Production Practices for Guayule Commercialization	David D. Rubis	\$73,900	09/01/80	08/31/81
Univ. of Arizona Tucson, Arizona 85721	Water Use and Production Practices for Guayule	Delmar D. Fangmeier	\$71,800	09/01/80	08/31/81
Univ. of Arizona Tucson, Arizona 85721	Guayule Improvement Utilizing the Arizona Germplasm Collections	Duane L. Johnson	\$67,300	09/01/80	08/31/81
California Arboretum Foundation, Inc. 301 N. Baldwin Ave. Arcadia, California 91006	Breeding for Increased Rubber Yield in Guayule	George P. Hanson	\$75,000	09/01/80	08/31/81
Dept. of Food & Agric. State of California 1220 N St. Sacramento, California 95814	Optimize Rubber Production in Guayule by Breeding and Selection	H. M. Tysdal	\$75,000	09/01/80	08/31/81
New Mexico State Univ. Las Cruces, New Mexico 88003	Influence of Establishment Methods and Herbicides on Guayule Rubber Production and Effects of Plant-parasitic Nematodes on Growth of Guayule	J. Wayne Whitworth	\$70,000	09/01/80	08/31/81

NATIVE LATEX RESEARCH GRANTS PROGRAM
PROGRAM AREA: GUAYULE (NATIVE LATEX):
AGRONOMIC PRACTICE, BREEDING AND SELECTION

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Texas A&M Research Foundation College Station, Texas 77843	Establishment and Cultivation Practices for Guayule Production in West Texas	J. L. Tipton	\$75,000	09/01/80	08/31/81
Texas A&M Research Foundation College Station, Texas 77843	Developing Salinity, Irrigation and Fertility Management of Guayule Grown With Gypseous Saline Water	S. Miyamoto	\$51,900	09/01/80	08/31/81

TOTAL: \$630,500

SOLAR ENERGY SYSTEMS FOR AGRICULTURE PROGRAM

The emphasis in this research is on passive and passive-hybrid solar systems. The research involves collection, storage, and use of solar energy--and the use of biomass and wind energy as backup systems to direct solar systems. Specific areas of single-purpose uses were solar energy for crop drying, for livestock shelters, for heating and cooling green-houses and rural residences, and for use in food processing. Of particular interest are research proposals developing multiple-use systems with systems using solar energy in more than one form--such as with biomass heat energy--and producing energy for more than one of the uses listed above.

Grants for solar energy research totaled \$1,788,300 in FY 1980.

The Solar Energy Systems for Agriculture program is authorized by the Research and Marketing Act of 1946, as amended (7 U.S.C. 427, 427i, 1621-1629), and P.L. 95-224 (41 U.S.C. 501 et seq.). SEA is administering this program with pass-through funds from the U.S. Department of Energy. Qualified scientists in FY 1980 associated with the State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal and State agencies, and private organizations or corporations were eligible to apply for grants.

SOLAR ENERGY SYSTEMS FOR AGRICULTURE
PROGRAM AREA (TO INCLUDE): MULTIPLE-USE SOLAR SYSTEMS (2.1 -2.2-),
SOLAR ENERGY USES IN FOOD PROCESSING, SOLAR ENERGY FOR CROP DYING,
AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL INVESTIGATOR	AMOUNT	AGREEMENT PERIOD	
				FROM	TO
Auburn Univ. Auburn Univ., Alabama 36849	Heating of Poultry Houses with Multiple Forms of Solar Energy	Robert N. Brewer	\$55,000	09/15/80	09/30/81
Univ. of Arizona Tucson, Arizona 85721	Fruit Dehydration Utilizing Commercial Greenhouses as Solar Heat Collectors	Ralph L. Price	\$29,100	09/15/80	09/30/81
California Polytechnic State Univ. Fdn. San Luis Obispo, California 93407	Solar Heated Brooder House	Edgar J. Carnegie	\$40,200	09/15/80	09/30/81
Lockheed Missiles & Space Company, Inc. 1111 Lockheed Way Sunnyvale, California 94086	Greenhouse Seasonal Storage	James W. Fletcher	\$50,200	09/15/80	09/30/81
Lockheed Missiles & Space Company, Inc. 1111 Lockheed Way Sunnyvale, California 94086	Annual Cycle Solar Regeneration of Desiccants for Crop Drying	James W. Fletcher	\$56,900	09/15/80	09/30/81
U.S. Dept. of Agric. Economics, Statistics, & Cooperatives Service 500 12th St., S.W. Washington, D.C. 20250	Economic Analysis of Solar Energy Systems for Agriculture	Walter G. Heid	\$13,200	09/15/80	09/30/81
Univ. of Delaware Newark, Delaware 19711	Techniques and Component Designs for a Cost-effective Brooding System	Norman E. Collins	\$49,300	09/15/80	09/30/81

SOLAR ENERGY SYSTEMS FOR AGRICULTURE
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 SOLAR ENERGY USES IN FOOD PROCESSING, SOLAR ENERGY FOR CROP DYING,
 AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Institute of Food & Agric. Sciences Univ. of Florida Gainesville, Florida 32611	Dual-mode Solar Regeneration of Solid Desiccants for Food Drying	William M. Miller	\$37,000	09/15/80	09/30/81
Univ. of Georgia Research Foundation Inc. Athens, Georgia 30602	A Modular Passive Solar Wall and Radiant Floor Slab for Partial House Brooding	William F. Milburn	\$33,900	09/15/80	09/30/81
Georgia Tech Research Institute Georgia Institute of Technology Atlanta, Georgia 30332	Microprocessor-based Process Control for Solar/Agricultural Applications	Jay H. Schlag	\$46,300	09/15/80	09/30/81
Hawaii Inst. of Tropical Agric. & Human Resources Univ. of Hawaii at Manoa Honolulu, Hawaii 96822	A Hybrid Solar-Biogas System for Food Dehydration	James H. Moy	\$38,400	09/15/80	09/30/81
Purdue Research Foundation West Lafayette, Indiana 47907	Use of Solar Energy and Biomass for the Concentration of Liquid Foods	Martin R. Okos	\$82,600	09/15/80	09/30/81
Purdue Research Foundation West Lafayette, Indiana 47907	Drying Grain with Combination Systems Using Solar Energy and Biomass	George H. Foster	\$73,400	09/15/80	09/30/81

SOLAR ENERGY SYSTEMS FOR AGRICULTURE
 PROGRAM AREA (TO INCLUDE): MULTIPLE-USE SOLAR SYSTEMS (2.1 -2.2-),
 SOLAR ENERGY USES IN FOOD PROCESSING, SOLAR ENERGY FOR CROP DRYING,
 AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Purdue Research Foundation West Lafayette, Indiana	Solar Energy for Heating Greenhouses and Plant Soil 47907	Alvin C. Dale	\$75,400	09/15/80	09/30/81
Iowa State Univ of Science & Technology Ames, Iowa 50011	Solar Energy for Grain Drying	Carl J. Bern	\$42,800	09/15/80	09/30/81
Agric. & Home Economics Expt. Station Iowa State Univ. of Science and Technology Ames, Iowa 50011	Improved Annual Efficiency of Solar-assisted Swine Unit by Microcomputer Control	Dwayne S. Bundy	\$24,600	09/15/80	09/30/81
Kansas State Univ. Manhattan, Kansas 66506	Using Exhausted Carbon Dioxide to Increase Solar Energy Use in Greenhouses	Charles K. Spillman	\$50,000	09/15/80	09/30/81
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Integrated Multiple-Use Solar System with Biomass Gasification-Combustion Backup	Ira J. Ross	\$79,600	09/15/80	09/30/81
Univ. of Kentucky Research Foundation Lexington, Kentucky 40506	Heat Storage and Focusing Solar Collector for Agriculture	Blaine F. Parker	\$56,200	09/15/80	09/30/81
USDA, SEA/AR, Southern Region P.O. Box 53326 New Orleans, Louisiana	Solar Energy for Crop Drying and Curing in the Southeast 70153	John M. Troeger	\$14,000	09/15/80	09/30/81

SOLAR ENERGY SYSTEMS FOR AGRICULTURE
PROGRAM AREA (TO INCLUDE): MULTIPLE-USE SOLAR SYSTEMS (2.1 -2.2-),
SOLAR ENERGY USES IN FOOD PROCESSING, SOLAR ENERGY FOR CROP DRYING,
AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
USDA, SEA/AR, Southern Region P.O. Box 53326 New Orleans, Louisiana	Using Solar Energy to Cure Burley Tobacco 70153	Wiley H. Henson	\$30,500	09/15/80	09/30/81
USDA, SEA/AR, Southern Region P. O. Box 53326 New Orleans, Louisiana	Direct Solar/Wind Hybrid Food Dryers for Farms and Cooperatives 70153	Charles J. Wagner	\$71,900	09/15/80	09/30/81
USDA, SEA/AR, Southern Region P.O. Box 53326 New Orleans, Louisiana	Integrated Greenhouse, Residence and Hybrid Solar System 70153	Jerry O. Newman	\$50,000	09/15/80	09/30/81
Univ. of Maryland College Park, Maryland 20742	Utilization of Solar Energy in Broiler Production	Kenneth E. Felton	\$47,400	09/15/80	09/30/81
Univ. of Massachusetts Amherst, Massachusetts 01003	Use of Solar-Concentrated Water-Absorbing Brines to Concentrate Liquid Foods	Henry G. Schwartzberg	\$72,900	09/15/80	09/30/81
Michigan State Univ. East Lansing, Michigan 48824	Optimal Control of Solar Water Heating for Food Receiving Plants	F. W. Bakker-Arkema	\$30,200	09/15/80	09/30/81
Michigan State Univ. East Lansing, Michigan 48824	Microprocessor Control for Solar Energy Systems in Agriculture	Howard L. Person	\$48,400	09/15/80	09/30/81
Univ. of Nebraska Lincoln, Nebraska 68583	Drying Scheduling Across the North Central Region	Thomas L. Thompson	\$23,500	09/15/80	09/30/81

SOLAR ENERGY SYSTEMS FOR AGRICULTURE
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 AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

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INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Univ. of Nebraska Lincoln, Nebraska 68583	Solar Energy System for Livestock Production Facilities	Gerald R. Bodman	\$54,300	09/15/80	09/30/81
New Jersey Agric. Expt. Station Rutgers, The State Univ. New Brunswick, New Jersey	Greenhouse Heating with Summer Collector Utilization 08903	David R. Mears	\$65,300	09/15/80	09/30/81
Cornell Univ. Ithaca, New York	A Passive Solar Heating System for Commercial Greenhouses	Louis D. Albright	\$60,300	09/15/80	09/30/81
South Dakota State Univ. Brookings, South Dakota 57007	Multiple-Use Agricultural Solar System Design, Development and Evaluation	Mylo A. Hellickson	\$54,200	09/15/80	09/30/81
Agric. Expt. Station Univ. of Tennessee Knoxville, Tennessee 37901	A Multi-Use Modular Dryer for Large Hay Packages Using Solar Heated Air	Bobby L. Bledsoe	\$40,000	09/15/80	09/30/81
The Memphremagog Group P. O. Box 456 Newport, Vermont 05855	Air-to-Air Heat Exchangers for Livestock Shelters and Greenhouses	Lawrence B. Hamilton	\$38,800	09/15/80	09/30/81
Washington State Univ. Pullman, Washington 99164	Hop Drying and Greenhouse Heating with Solar and Biomass Energy	Glenn A. Kranzler	\$64,700	09/15/80	09/30/81

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 AND, SOLAR ENERGY USE IN LIVESTOCK SHELTERS

GRANTS AWARDED FOR FISCAL YEAR 1980

INSTITUTE	TITLE	PRINCIPAL	AMOUNT	AGREEMENT PERIOD	
		INVESTIGATOR		FROM	TO
Washington State Univ. Pullman, Washington 99164	Direct Pasteurization of Fluid Foods Utilizing Solar Energy	Denny C. Davis	\$60,500	09/15/80	09/30/81
Univ. of Wisconsin Madison, Wisconsin 53706	Economic Analysis of Solar Energy Systems for Agriculture	Daryl B. Lund	\$27,300	09/15/80	09/30/81

TOTAL: \$1,788,300

SCIENTISTS WHO SERVED ON SEA PEER PANELS FOR FY 1980

Scientists from government, universities, and industry served on the SEA peer panels this past year. Each panel was put together to fit the expertises needed for that specific granting area. The scientists involved are listed below by State and by institution or organization.

ALABAMA

G. W. Benz
Auburn University

R. D. Shultz
Auburn University

Phillip H. Klesius
Science and Education Admin.
Auburn University

E. M. Jenkins
Tuskegee Institute

ARIZONA

Richard G. Jensen
University of Arizona

James Kuester
Arizona State University

ARKANSAS

Seth Y. Young
University of Arkansas

CALIFORNIA

Arthur L. Black
University of California

California--Continued

George M. Briggs
University of California

D. L. Brink
University of California

Bob B. Buchanan
University of California

Fredric W. Hill
University of California

Walter E. Howard
University of California

B. I. Osburn
University of California

GEORGIA

D. A. Ashley
University of Georgia

Charles Bacon
Science and Education Admin.
University of Georgia

Charles W. Beard
Science and Education Admin.
University of Georgia

Georgia--Continued

Murray Blum
University of Georgia

Richard S. Hussey
University of Georgia

Roger D. Wyatt
University of Georgia

HAWAII

Robert Van Reen
University of Hawaii

IDAHO

Jeffrey S. Green
Science and Education Admin.
Dubois

ILLINOIS

Richard M. Forbes
University of Illinois

Robert Goodman
University of Illinois

Frederick Meins, Jr.
University of Illinois

Illinois--Continued

Fred W. Slife
University of Illinois

John Leasure
Southern Illinois University

John Harkness
Argonne National Laboratory

INDIANA

J. D. Axtell
Purdue University

Richard A. Dilley
Purdue University

Michael Ladisch
Purdue University

IOWA

Richard N. Shibles
Iowa State University

N. F. Cheville
Science and Education Admin.

KANSAS

Stanley Clark
Kansas State University

KENTUCKY

G. B. Collins
University of Kentucky

B. F. Parker
University of Kentucky

LOUISIANA

M. J. Giamalva
Louisiana State University

MAINE

Norman Smith
University of Maine

MARYLAND

Ralph Bram
Animal and Plant Health
Inspection Service

E. I. Pilchard
Animal and Plant Health
Inspection Service

George G. Graham
Johns Hopkins University

J. M. Joshi
University of Maryland - ES

Harold W. Hawk
Science and Education Admin.

MASSACHUSETTS

Frederick M. Ausubel
Harvard University

William H. Orme-Johnson
Massachusetts Institute
of Technology

Barbara A. Underwood
Massachusetts Institute
of Technology

Massachusetts--Continued

Stanley N. Gershoff
Tufts University Nutrition
Institute

MICHIGAN

Dean L. Haynes
Michigan State University

B. A. Stout
Michigan State University

James M. Tiedje
Michigan State University

A. H. Hamdy
Upjohn Company

J. W. Lauderdale
Upjohn Company

MINNESOTA

Gary H. Heichel
University of Minnesota

D. W. Johnson
University of Minnesota

Ronald L. Phillips
University of Minnesota

B. S. Pomeroy
University of Minnesota

Edwin L. Schmidt
University of Minnesota

MISSISSIPPI

William Fox
Mississippi State University

MISSOURI

G. M. Chippendale
University of Missouri

Edward H. Coe, Jr.
University of Missouri

Victor H. Dropkin
University of Missouri

Donald Miles
University of Missouri

Mary-Dell Chilton
Washington University

MONTANA

D. E. Worley
Montana State University

NEBRASKA

John B. Campbell
University of Nebraska

Charles O. Gardner
University of Nebraska

NEW JERSEY

Bland Montencourt
Rutgers University

Myron Brin
Hoffman-LaRoche Inc.

New Jersey--Continued

William C. Campbell
Merck Institute for
Therapeutic Research

NEW YORK

William Bowers
Cornell University

J. H. Gillespie
Cornell University

Hans VanEtten
Cornell University

L. P. Walker
Cornell University

Kendall W. King
Research Corporation

Thomas A. LaRue
Boyce Thompson Institute

Elizabeth Dickson
Rockefeller University

NORTH CAROLINA

P. E. Bishop
North Carolina State University

William Johnson
North Carolina State University

George Kennedy
North Carolina State University

C. S. Levings
North Carolina State University

North Carolina--Continued

Thoyd Melton
North Carolina State University

P. D. Wyatt
North Carolina State University

John E. Boynton
Duke University

NORTH DAKOTA

William E. Cornatzer
University of North Dakota

OHIO

E. H. Bohl
Ohio State University

W. L. Roller
Ohio State University

John G. Streeter
Ohio State University

S. P. Targowski
Ohio State University

Donald R. Geiger
University of Dayton

L. C. Ferguson
Russellville

W. D. Bauer
C. F. Kettering Research Labs

OKLAHOMA

J. A. Hair
Oklahoma State University

OREGON

L. L. Boersma
Oregon State University

Harold J. Evans
Oregon State University

Dallice Mills
Oregon State University

PENNSYLVANIA

P. R. Blankehorn
Pennsylvania State University

G. E. Fackelman
University of Pennsylvania

RHODE ISLAND

John Biggins
Brown University

SOUTH CAROLINA

Earlene Rupert
Clemson University

TENNESSEE

P. C. Smith
University of Tennessee

Harry P. Broquist
Vanderbilt University

TEXAS

G. Bashkaran
Texas A&M University

Thomas L. Payne
Texas A&M University

E. J. Soltes
Texas A&M University

UTAH

N. K. Van Alfen
Utah State University

VIRGINIA

Phillip Mason
Virginia Polytechnic Institute
and State University

T. J. Smith
Virginia Polytechnic Institute
and State University

WASHINGTON

R. J. Cook
Washington State University

WEST VIRGINIA

E. K. Inskeep
West Virginia University

WISCONSIN

Fred Buelow
University of Wisconsin

J. W. Pendleton
University of Wisconsin

WASHINGTON, D.C.

Landy B. Altman
Science and Education Admin.

Rodney Bothast
Science and Education Admin.

James Butler
Science and Education Admin.

Quentin Jones
Science and Education Admin.

William Larson
Science and Education Admin.

Chester G. McWhorter
Science and Education Admin.

Eilif V. Miller
Science and Education Admin.

Lowell D. Owens
Science and Education Admin.

Clyde R. Richards
Science and Education Admin.

C. B. Rumburg
Science and Education Admin.

P. E. Schleusener
Science and Education Admin.

Earl J. Splitter
Science and Education Admin.

Howard S. Teague
Science and Education Admin.

Washington, D.C.--Continued

Dean Winter
Science and Education Admin.

Robert Yeck
Science and Education Admin.

Randall Barnes
Department of Energy

Conrad Chester
Department of Energy

Michael McDade
Department of Energy

J. Schreyer
Department of Energy

Joseph A. Berry
Carnegie Institution
of Washington

Lloyd Frederick
Agency for International
Development

